

Notice of Allowability

Application No.

10/539,342

Applicant(s)

MIHAN ET AL.

Examiner

Rip A. Lee

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to June 18, 2007.
2. ☒ The allowed claim(s) is/are 12 and 13.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Page 2

Claim 12, line 8 delete "geminal or"

Claim 12, line 9 delete "vicinal"

Examiner's note: Applicant has indicated in the response filed June 18, 2007, that he is willing to delete the phrase "geminal or vicinal" if there is acknowledgment that such an amendment does not relinquish any claim scope therein and that such an amendment is being done merely for informal purposes. The amendment is suggested not to limit the scope of the claim, but to correct the claim language. The two radicals R^{4B}, which are connected to the same carbon atom, are geminal to each other, but they are not vicinal to each other. In other words, said carbon atom is geminally substituted with two R^{4B} radicals. To streamline the claim language and obviate confusion, the claim has been amended to recite, "two radicals R^{4B} may also be joined...", the meaning of which is self-explanatory upon inspection of the structure accompanying claim 12.

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: Claims 12 and 13 are allowed over the closest references cited below.

The present invention is drawn to a process for preparing cyclopentadienyl systems of formula (VII) comprising the step *a*) where in step *a*), an A^- anion (A is an unsubstituted, substituted or fused, heteroaromatic ring system) is reacted with a fulvene of formula (VIIIa), or comprising step *a'*) where in step *a'*), an organometallic $R^{4B}M^BX^B$ is reacted with a fulvene of formula (VIIIb); (in this case, A is connected to the 1-carbon of the fulvene system).

A second aspect of the invention is drawn to a process for preparing cyclopentadiene systems of formula (VIIa) which comprises step *a''*) reaction of $A-CR^{2B}R^{2B}$ anion with a cyclopentenone system of formula (IX).

See claims for full structural details.

Mihan *et al.* (WO 01/12641; equivalent document U.S. 6,919,412) teaches preparation of [1-(8-quinoliny)(2,3,4,5-tetramethylcyclopentadienyl)]CrCl₂ by reaction of quinoliny anion with 2,3-dimethylcyclopent-2-enone.

Wang (WO 01/92346; equivalent U.S. 6,723,675) teaches preparation of 5-[(2-pyridyl)methyl]-1,2,3,4-tetramethylcyclopentadienylchromium dichloride and 5-[(2-quinoliny)methyl]-1,2,3,4-tetramethylcyclopentadienylchromium dichloride by reaction of lithium tetramethylcyclopentadienyl anion with 2-picoly chloride and 2-chloromethyl quinoline, respectively.

None of the cited references teaches or makes obvious the process recited in the instant claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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July 2, 2007

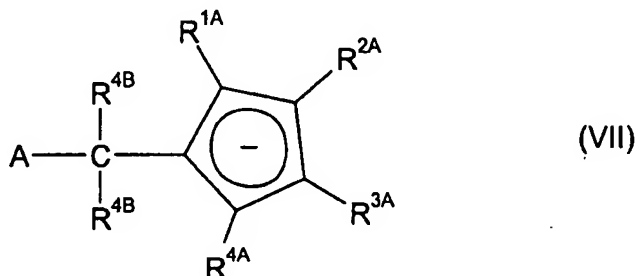

DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700



ATTACHMENT A

Claims 1 - 11: (Cancelled)

12. (Currently Amended) A process for preparing cyclopentadienyl system anions of the formula (VII),



where the variables have the following meanings:

R^{1A} - R^{4A} are each, independently of one another,

hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, NR^{6A}_2 , $N(SiR^{6A}_3)_2$, OR^{6A} , $OSiR^{6A}_3$, or SiR^{6A}_3 where the organic radicals R^{1A} - R^{4A} may also be substituted by halogens and two vicinal radicals R^{1A} - R^{4A} may also be joined to form a five- or six-membered ring, and/or two vicinal radicals R^{1A} - R^{4A} are joined to form a heterocycle which contains at least one atom selected from the group consisting of N, P, O and S,

R^{6A} are each, independently of one another, hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and two geminal radicals R^{6A} may also be joined to form a five- or six-membered ring,

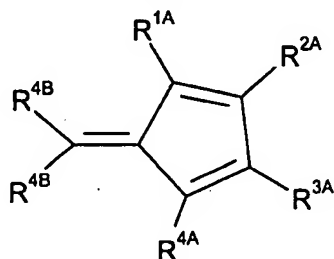
A is an unsubstituted, substituted or fused, heteroaromatic ring system,

R^{4B} are each, independently of one another, hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part or SiR^{3B}_3 , where the organic radicals R^{4B} may also be substituted by halogens and two ~~geminal or~~ ~~vicinal~~ radicals R^{4B} may also be joined to form a five- or six-membered ring and

R^{3B} are each, independently of one another, hydrogen, C_1 - C_{20} -alkyl, C_2 - C_{20} -alkenyl, C_6 - C_{20} -aryl or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and two radicals R^{3B} may also be joined to form a five- or six-membered ring,

which comprises the step a) or a'), where,

in step a), an A^- anion is reacted with a fulvene of the formula (VIIIa)



(VIIIa)

or,

in step a'), an organometallic compound $R^{4B}_b M^B X^B_b$ where M^B is a metal of group 1 or 2 of the Periodic Table of the Elements;

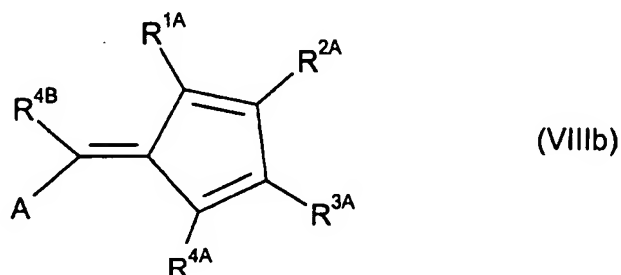
X^B is halogen, C_1 - C_{10} -alkyl, alkoxy having from 1 to 20 carbon atoms in the alkyl radical and/or from

6 to 20 carbon atoms in the aryl radical, or $\underline{R^{4B}}$
 R^{2B} and

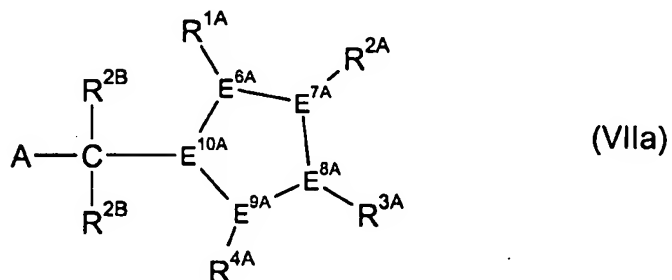
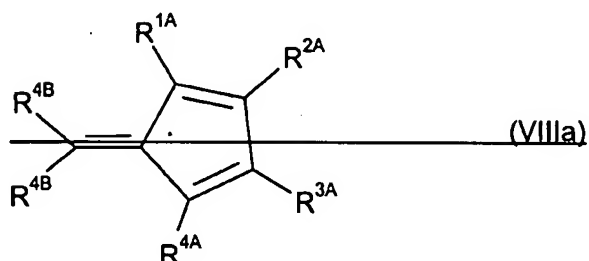
b is 0 when M^B is a metal of group 1 of the Periodic Table of the Elements and is 1

when M^B is a metal of group 2 of the Periodic Table of the Elements,

is reacted with a fulvene of the formula (VIIIb):



13. (Original) A process for preparing cyclopentadiene systems of the formula (VIIa)



where the variables have the following meanings:

$E^{6A}-E^{10A}$ are each carbon, where in each case four

adjacent $E^{6A}-E^{10A}$ form a conjugated diene system

and the remaining $E^{6A}-E^{10A}$ additionally bears a hydrogen atom,

$R^{1A}-R^{4A}$ are each, independently of one another,

hydrogen, C_1-C_{20} -alkyl, C_2-C_{20} -alkenyl, C_6-C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, NR^{6A}_2 , $N(SiR^{6A}_3)_2$, OR^{6A} , $OSiR^{6A}_3$, or SiR^{6A}_3 , where the organic radicals $R^{1A}-R^{4A}$ may also be substituted by halogens and two vicinal radicals $R^{1A}-R^{4A}$ may also be joined to form a five- or six-membered ring, and/or two vicinal radicals $R^{1A}-R^{4A}$ are joined to form a heterocycle which contains at least one atom selected from the group consisting of N, P, O and S,

R^{6A} are each, independently of one another, hydrogen, C_1-C_{20} -alkyl, C_2-C_{20} -alkenyl, C_6-C_{20} -aryl, or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and two geminal radicals R^{6A} may also be joined to form a five- or six-membered ring,

A is an unsubstituted, substituted or fused, heteroaromatic ring system,

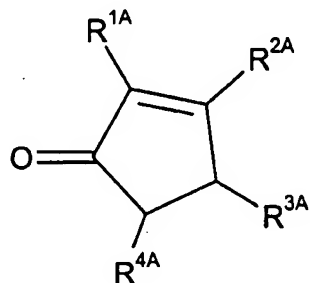
R^{2B} are each, independently of one another, hydrogen, C_1-C_{20} -alkyl, C_2-C_{20} -alkenyl, C_6-C_{20} -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part or SiR^{3B}_3 , where the organic radicals R^{2B} may also be substituted by halogens and R^{2B} and A may also be joined to form a five- or six-membered ring,

R^{3B} are each, independently of one another, hydrogen, C_1-C_{20} -alkyl, C_2-C_{20} -alkenyl, C_6-C_{20} -aryl or alkylaryl having from 1 to 10 carbon atoms in the

alkyl part and 6-20 carbon atoms in the aryl part and two radicals R^{3B} may also be joined to form a five- or six-membered ring,

which comprises the following step:

a'') reaction of an $A-CR^{2B}R^{2B-}$ anion with a cyclopentenone system of the formula (IX)



(IX)

14. (Cancelled)

15. (Cancelled)